Pluripotency of male germline stem cells.

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Public Summary:
The ethical issues and public concerns regarding the use of embryonic stem (ES) cells in human therapy have motivated considerable research into the generation of pluripotent stem cell lines from non-embryonic sources. Numerous reports have shown that pluripotent cells can be generated and derived from germline stem cells (GSCs) in mouse and human testes during in vitro cultivation. The gene expression patterns of these cells are similar to those of ES cells and show the typical self-renewal and differentiation patterns of pluripotent cells in vivo and in vitro. However, the mechanisms underlying the spontaneous dedifferentiation of GSCs remain to be elucidated. Studies to identify master regulators in this reprogramming process are of critical importance for understanding the gene regulatory networks that sustain the cellular status of these cells. The results of such studies would provide a theoretical background for the practical use of these cells in regenerative medicine. Such studies would also help elucidate the molecular mechanisms underlying certain diseases, such as testicular germ cell tumors.

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